ELEPHANT LIFTING PRODUCTS™

ATS PNEUMATIC

OPERATION, MAINTENANCE AND SAFETY MANUAL

ATSI INDUSTRIAL SERIES

LME 155

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LIFTING & PULLING EXCELLENCE

ASME B30.16 AND SANS 1638 COMPLIANT

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THIS MANUAL MUST BE READ BEFORE USING OR REPAIRING THESE PRODUCTS.

This manual contains important safety, installation, operation, maintenance and repair information. Make this manual available to all persons responsible for the operation, installation, maintenance and repair of these products.

Do not use this hoist for lifting, supporting, or transporting people or lifting or supporting loads over people.

Always operate, inspect and maintain this hoist in accordance with South African Bureau of Standards Specification number SANS1638:2008 pneumatically powered chain hoists and SANS 1639:2010 Reconditioned pneumatically powered chain hoists and any other safety codes or procedures relevant to the industry in which the hoist is being. Used. Testing of pneumatically powered chain hoists must only be carried out by the competent person contemplated in SANS 1639:2010.

For Hoist used outside of South Africa:

It is the responsibility of the owner/user to install, inspect, test, maintain, and operate a hoist in accordance with ANSI/ASME B30.16, “Safety Standard for Overhead Hoists”, OSHA regulations. If the hoist is installed as part of a
total lifting system, such as an overhead crane or monorail, it is also the responsibility of the owner/user to comply with the applicable ANSI/ASME B30 volume that addresses that type of equipment.

It is the responsibility of the owner/user to have all personnel that will install, inspect, test, maintain, and operate a hoist read the contents of this manual and applicable portions of ANSI/ASME B30.16, “Safety Standard for Overhead Hoists” and OSHA Regulations. If the hoist is installed as part of a total lifting system, such as an overhead crane, the applicable ANSI/ASME B30 volume that addresses that type of equipment must also be read by all personnel.
If the hoist owner/user requires additional information, or if any information in the manual is not clear, contact Harrington or the distributor of the hoist. Do not install, inspect, test, maintain, or operate this hoist unless this information is fully understood.

A regular schedule of inspection of the hoist in accordance with the requirements of ANSI/ASME B30.16 should be established and records maintained.

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Preface

ATS2000 (PTY) LTD warrants to the user its hoists, and other products to be free from defects in material and workmanship for a period of one year from the date of purchase.

ATS2000 will repair, without cost to the user, any product found to be defective, including parts and labour charges, or at ATS2000's option, will replace such products or refund the purchase price less a reasonable allowance for handling in exchange for the product. Repair and replacements are warranted for the remainder of the original warranty period.

If any product proves defective within its original one year warranty period, it shall be returned to ATS2000 (PTY) LTD with proof of purchase and the original test certificate.

This warranty does not apply to products which ATS2000 has determined to have been misused or abused, improperly maintained by the user, or where the malfunction or defect can be attributed to the use of non-genuine ATS2000 parts.

ATS2000 (PTY) LTD makes no other warranty and its maximum liability is limited to the purchase price of the product and in no event will ATS2000 (PTY) LTD not be liable for any consequential, indirect, incidental or special damages of any nature arising from the sale or use of the product whether based on contract or otherwise.

It is ATS2000 (PTY) LTD policy to promote safety of all persons and equipment in the workplace. All equipment manufactured is thoroughly checked, packed and inspected before dispatch. Any loss or damage which occurs during shipment while en-route must be reported to ATS2000 immediately. Should any item be delivered to you in apparent good condition, but upon opening the container, loss or damage has taken place while in transit; notify ATS2000 (PTY) LTD immediately. Should any items be delivered back to ATS2000 (PTY) LTD all transport costs will be for the account of the user.

These instructions are prepared by ATS2000 (PTY) LTD for the purpose of maintenance, repair and the use of its air hoists.

No responsibility for failure of equipment due to manufacturing procedure will be assumed if these instructions are not carried out. Only original ATS2000 supplied spares are to be used in all repairs.

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Safety Information

This manual will refer to existing legal requirements and engineering practices as known when this document was written. Should any such legislation or practices change or be "enlarged" upon then due consideration must be taken. Various standards have been used to assist in compiling this document and will be listed where applicable.

The use of powerful lifting equipment is subject to certain hazards that cannot be overcome by mechanical means but only by the exercise of intelligence, care and common sense. It is therefore essential that personnel involved in the use and operation of equipment must be competent, careful, physically and mentally qualified, and trained in the safe operation of equipment and the handling of the loads. Serious hazards are overloading, dropping or slipping of the load caused by improper hitching or slinging, obstructing the free passage of the load and using equipment for a purpose for which it was not intended or designed. The above can lead to fatal consequences.

ATS2000 (PTY) LTD fully realizes the importance of proper design factors, minimum and maximum sizes and other limiting dimensions of the chain and its fastenings, sprockets and similar equipment all of which are designed with safety in mind.

The various conditions of the equipment or material can vary depending on the environment they are used in which may cause corrosion or wear and any other variables that may arise in each individual application. It is in the light of this that the hoist be maintained and repaired under the supervision of a competent person:

1. Who is qualified by virtue of his knowledge, training, skills and experience to organize the work and its performance.

2. Who is familiar with the legal requirements which apply to the work to be performed.

3. Who has been trained to recognize any potential or actual danger to health and safety in the performance of the work.

The instructions given in this manual must be interpreted accordingly and sound judgment used in determining their application.

This manual provides information for all personnel involved with the safe installation, operation and proper maintenance of this product. Even if you feel you are familiar with this or similar equipment, you should read and understand this manual before operating the product. As certain aspects of this product may be different to what you are accustomed to.

Danger, Warning, Caution and Notice

Throughout this manual there are steps and procedures which, if not followed, may result in an injury. The following signal words are used to identify the level of potential hazard.

DANGER Danger is used to indicate the presence of hazard which will cause ***severe*** injury, death or substantial property damage if the warning is ignored.

WARNING Warning is used to indicate the presence of a hazard which ***can*** cause ***severe*** injury, death, or substantial property damage if the warning is ignored.

CAUTION Caution is used to indicate the presence of a hazard which ***will*** or ***can*** cause minor injury or property damage if the warning is ignored.

NOTICE Notice is used to notify people of installation, operation, or maintenance information which are important but not hazard-related.

Safety Summary

WARNING

- **Do not use this hoist or any equipment attached to it for lifting, supporting, or transporting people or lifting or supporting loads over people.**
- **ATS INDU series of air hoists are designed to provide a MINIMUM of 5 to 1 safety factor. It is the responsibility of the customer to ensure that the structure to which the hoist is attached and any load attaching devices are capable of handling the static and dynamic loads imposed on the structure by the hoist and its attachments when lifting the rated load. If in doubt, consult a registered professional structural engineer.**

NOTICE

- **Lifting equipment is subject to different regulations in each country. These regulations may not be specified in this manual.**

- **Whenever a conflict arises between the contents of this manual and any other applicable legislation, standard or procedure, the more stringent of the two must be applied.**

The Occupational Health and Safety Act and Mine Health and Safety Act and other recognized safety sources make a common point: Employees who work near cranes or assist in hooking on or arranging a load should be instructed to keep out from under the load. From a safety standpoint, one factor is paramount: conduct all lifting operations in such a manner that if there were an equipment failure, no personnel would be injured. This means keep out from under a raised load an keep out of the intended path of any load.

ATS 2000 industrial and mining air hoists are manufactured in accordance with the latest ISO9001 standards.

The Occupational Safety and Health Act of 1993, section 10 states:
10. (1) Any person who designs, manufactures, imports, sells or supplies any article for use at work shall Ensure, as far as is reasonably practicable, that the article is safe and without risks to health when properly used and that it complies with all prescribed requirements.

(2) Any person who erects or installs any article for use at work on or in any premises shall ensure, as far as is reasonably practicable, that nothing about the manner in which it is erected or installed makes it unsafe or creates a risk to health when properly used.

(3) Any person who manufactures, imports, sells or supplies any substance for use at work shall –

(a) ensure, as far as is reasonably practicable, that the substance is safe and without risks to health when properly used; and

(b) take such steps as may be necessary to ensure that information is available with regard to the use of the substance at work, the risks to health and safety associated with such substance, the conditions necessary to ensure that the substance will by safe and without risks to health when properly used and the procedures to be followed in the case of an accident involving such substance.

(4) Where a person designs, manufactures, imports, sells, or supplies an article or substance for or to another person, and that other person, and that other person undertakes in writing to take specified steps sufficient to ensure, as far as is reasonable practicable, that the article or substance will comply with all prescribed requirements and will be safe and without risks to health when properly used, the undertaking shall have the effect of relieving the first mentioned person from the duty imposed upon him by this section to such an extent as may be reasonable having regard to the terms of the undertaking.

It is the owner's and user's responsibility to determine the suitability of a product for any particular use. It is recommended that all applicable industry, trade association and legislation be checked. Read all operation instructions and warnings before operation.

Rigging: It is the responsibility of the operator to exercise caution, use common sense and be familiar with proper rigging techniques.

This manual has been produced by **ATS 2000** to provide agents, fitters, riggers operators and company personnel with the information required to install, operate, maintain and repair the products described herein.

It is extremely important that fitters, riggers and operators be familiar with the servicing procedures of these products, or similar products, and are physically capable of conducting the procedures. These personnel shall have a general working knowledge that includes:

1. Proper and safe use and application of fitter's common hand tools as well as special or recommended tools.
2. Safety procedures, precautions and work habits established by accepted industry standards.

ATS 2000 cannot know of, nor provide all the procedures by which product operations or repairs may be conducted and the hazards and/or results of each method. If operation or maintenance procedures not specifically recommended by the manufacturer are conducted, it must be ensured that product safety is not endangered by the actions taken. If unsure of an operation or maintenance procedure or step, personnel should place the product in a safe condition and contact supervisors and/or the factory for technical assistance.

Safe Operating Procedures

The following warnings and operating instructions are recommended are recommended and are intended to avoid unsafe operating practices which might lead to personal injury or property damage

ATS2000 recognize that most companies who use hoists have a safety program in force in their plants and factories. In the event you are aware that some conflict exists between a rule set forth in this publication and a similar rule already set by an individual company, the more stringent of the two should take precedence.

Safe Operating Instructions are provided to make an operator aware of dangerous practices to avoid and are not necessarily limited to the following list. Refer to specific sections in the manual for additional safety information.

1. Read the manufacturer's instructions before operating the hoist.
2. Never lift a load greater than the rated capacity of the hoist (unless for test purposes).
3. Never use the load chain as a sling.
4. Never operate the hoist with twisted, kinked or damaged chain.
5. Be certain the load is properly seated in the saddle of the hook.
6. Do not use load chains as an earth for welding. Do not attach a welding electrode to a hoist or sling chain.
7. Do not use the up and down buffer stops as a means of stopping a hoist. The up and down buffer stops are emergency devices only. Keep hands and clothing free from the toggle lever.
8. Do not leave a load suspended for extended periods.
9. Always stand clear of the load path.
10. Never use the hoist for lifting or lowering people, and never stand on or under a suspended load.
11. Never lift, move or suspend loads over people.
12. Before each shift, check the hoist for wear or damage. Check brakes, limit buffer stops, etc.
13. Periodically, inspect the hoist thoroughly and replace worn or damaged parts.
14. Follow the lubrication instructions.
15. Do not attempt to repair load chain or hooks. Replace them when they become worn or damaged.
16. Never operate a hoist when the load chain is not centered under the hook. Do not pull the load sideways.
17. Always rig the hoist properly and carefully.
18. Do not apply shock loads to the hoist. Take up the slack chain slowly when commencing with lifting operations.
19. Keep the load chain clean and well lubricated. Do not drag the load chain or hook on the floor.
20. Be certain there are no objects in the way of a moving load.
21. Be certain the air supply is shut off preferably locked out or disconnected before performing maintenance on the hoist.
22. Do not swing a suspended load.
23. Keep the load block overhead when not in use.
24. Properly secure the hoist before leaving it unattended.
25. Only allow personnel trained in safety and operation of this product to operate the hoist.
26. Avoid collision or bumping of hoists.
27. Do not operate a hoist if you are not physically fit to do so.
28. Pay attention to the load at all times when operating a hoist.
29. Never splice a hoist chain by inserting a bolt between links or by any other means.

30. Do not force a chain or hook into place by hammering.

31. Do not allow the chain to be exposed to extremely cold weather. Do not apply loads to an extremely cold chain.

Installation

Pre use Check

1. Check that the hoist has been delivered free of damage. Damage may occur during shipping.

2. The hoist is supplied with a test certificate and an instruction, maintenance and parts manual. When initially receiving the hoist check that the serial number on the hoist and certificate correspond.

3. Ensure that the hoist's serial number and working load limit (rated load) are clearly marked on the hoist.

4. Check that the hoist that has been delivered is capable of performing the required task.

5. Record the hoist's serial number in a log book especially for the cording of hoist inspections.

All the hoists transmission components are lubricated internally by the factory on assembly. It is essential that the motor lubricator is filled so that the load chain will lubricated when the hoist is put into service.

CAUTION

- **Before installing the hoist, the owner and user of the hoist should consult any safety information or regulations pertaining to the particular type of installation in which the hoist will be used.**

WARNING

- **The raising and lowering of loads is potentially hazardous task by virtue of the fact that raised objects store large amounts of potential energy. Safety is therefore of prime importance. Read the section on "SAFETY INFORMATION" before installing the hoist.**

Mounting of the Air Hoist

Proper initial installation of the hoist will ensure long trouble free service and will also limit the possibility of accidents occurring.

The hoist must be attached safely to secure structure of sufficient strength. The structure should be able to hold at least **5 times** the hoist chain rated load. Preferably use a shackle or a sling to attach the hoist to the structure. The anchorage, fittings and framework must not show any signs of distortion when the hoist is lifting its rated load.

Hook Mounted Hoist Installation

For hook mounted hoists, ensure that the sling, shackle or hoist support member rests in the saddle of the hook. This will minimize the chance of accidental disconnection. Do not support the hoist from a member that tilts the hoist to one side. The hoist must not be prevented from moving into its natural operating position when under load. Make sure hook latch is engaged.

Rigid Mounted Trolley Hoist Installation

The hoist attachment cradle will be attached to the hoist when shipped from the factory. The cradle must be attached to the trolley using both the hoist support shafts. Spacers must be installed between the cradle and the trolley side plates to ensure the correct wheel spacing. The distance between the wheel flanges must be 4.5mm to 6.0mm larger than the flange size of the beam. The same number of spacers must be installed on both sides of the cradle to ensure that the hoist is centered under the I-beam. Install at least one spacer between the cradle and each side plate and between the side plates and the support shaft nut. The support shaft nuts must be securely fastened.

After installation, allow the hoist to lift its rated load about 200mm off the ground and move the trolley along the entire length of the beam to ensure correct operation before usage.

CAUTION

- **The hoist must be centered under the trolley when spacer driven are increased or degrease to match "I" beam. This will prevent unbalanced loads damaging the trolley and the hoist.**

- **When the hoist is mounted rigidly to the trolley, do not apply side loads perpendicular to the natural tilt of the hoist.**

Installation of the Chain Bag/Container

1. The chain container must be able to accommodate the full length of load chain. If the load chain will not feed into the chain container due to it being over full, a larger container must be fitted.

2. Allow the hoist to lower the bottom hook until the lower hook is at its lowest point of travel. Do not stall the hoist.

3. Attach the chain container to the hoist.

4. Now run the hoist so that the hook is lifted. The slack side of the chain will feed into the chain container.

NOTICE

- **Ensure that the chain container is positioned such that the load chain, hook or undercarriage does not come into contact with the chain container.**

- **Do not fill the chain container by hand. This may cause the chain to twist resulting in jamming of the hoist.**

Air Supply

The ATSi INDU series hoists are rated 6.2 bar. This pressure must be maintained at entry to the hoist to enable the hoist to operate at rated load as specified under the section "SPECIFICATIONS". The hoists will however operate at pressures of as low as 4 bar but performance will be affected. The air supply to the hoist must be clean, free from water and contain lubrication.

- **The hoist must NOT be subjected to air pressures exceeding 7 bar as this may cause excessive dynamic loading of the hoist.**

Air Lines

It is recommended that the minimum inner diameter of the supply hose to the hoist be between 19 and 25.0mm. For supply hose lengths to the hoist in excess of 30m use a larger diameter hose. Before connecting the hose to the hoist, remove any dirt from the hose by blowing compressed air through the hose into the atmosphere. Do not point the hose at anyone while doing this. In order to reduce pressure drops in the supply hose which can affect hoist performance, the supply hose should be kept as short and straight as possible. Keep the number of hose fittings to a minimum size of 16mm as they cause unnecessary restrictions.

NOTICE

- **Always use an air line filter-lubricator unit with an ATS2000 air hoist, if not already fitted in the hoist or hoist control valve system.**

Air Line Lubricator

The lubricator must have inlet and outlet ports at least as large as the inlet on the hoist motor. Install the air line lubricator as close to the air inlet on the hoist motor as possible. Refer to "Accessories" in the "PARTS" section for the recommended Filter-Lubricator. Where hoists are frequently moved from one location to another particularly in the mining environment we recommend the use of the portable filter-lubricator assembly shown in Figure 3. The use of a pressure regulator is also recommended for pressures higher than 7 Bar since it allows for constant pendent control sensitivity and hoist performance.

CAUTION

- **In line lubricator must be installed no more than 3 m from the hoist.**

The air line lubricator must be set to deliver a minimum of 1 to 3 drops per minute when the hoist is running at full speed. The recommended lubricant is a light oil ie. SAE 10W or 27 to 32 centistokes.

CAUTION

- **Do not use automotive type detergent oil. These oils will delaminate the motor vanes and cause motor failure.**

- **Shut off air supply before filling the air line lubricator.**

Air Line Filter

Dirt or grit entering the hoist motor will cause severe damage to the internal components. We recommend the installation of a 100 micron air filter as close as possible to the hoist where it is not internal. The filter should be cleaned weekly to prevent excessive pressure drops due to constriction of the filter element. Filters incorporating a water trap are also recommended. Moisture entering the hoist motor reduces the efficient operating life of the hoist and should be removed via line water traps/separators.

Storing the Hoist

1. If the hoist is to be stored for a long time, spray anti corrosion spray or SAE 10W or 27-32 centistoke oil into the air inlet port and run the hoist slowly for a few seconds. This will compensate for the slight delay of the oil coming from the lubricator, and stop moisture rusting the bearings.

2. Plug hoist air inlet port.

3. Always store the hoist in a no load condition.
4. Wipe of all dirt and water.

5. Oil the load chain, hook pins and hook latch.

6. Store the hoist in a clean dry environment.

7. Before returning the hoist to service, follow instructions for hoists not in regular service in the “INSPECTION” section.

Operation

The four most important aspects of hoist operation are:

1. Follow all safety instructions when operating hoist.

2. Allow only people trained in safety and operation of this product to operate hoist.

3. Subject each hoist to a regular inspection and maintenance as outlined in this manual under the section ”Inspection”.

4. Be aware of the hoist capacity and weight of load at all times.

Operators must be physically competent. Operators must have no health condition which might affect their ability to act, and they must have good hearing, vision and depth perception. The hoist operator must be carefully instructed in his duties and must understand the operation of the hoist, including a study of manufacturer’s literature. The operator must thoroughly understand proper methods of hitching loads and should have a good attitude regarding safety. It is the operator’s responsibility to refuse to operate the hoist under unsafe conditions.

Initial Operating Checks

Hoists are tested for proper operation prior to leaving the factory. Before the hoist is placed into service after repair, the following initial operating checks should be performed.

1. After installation of trolley mounted hoists, check to ensure the hoist is centred below the trolley.

2. Check for air leaks in the supply hose and fitting to the pendent and from the pendent to the control valve block.

3. When first running the hoist or trolley motors, some light oil (SAE 10W or 27 -32 Centistoke) should be injected into the inlet connection to allow good initial lubrication.

4. Check that the lubricator is feeding oil constantly as the initial injection will only lost for a few minutes.

5. Check that the air filter is not blocked, clean out when necessary.

6. When first operating the hoist and trolley, it is recommended that the motors be driven slowly in both directions for a few minutes.

7. Operate the trolley along the entire length of the beam ensuring that the air supply hose cannot kink.

8. Test hoist and trolley performance when raising, moving ad lowering test load(s). Hoist and trolley must operate smoothly and at rated specification prior to being entered into service.

9. Check that trolley (if equipped) and hook movement is in the same direction as arrows on the pendent control

10. Raise and lower a light load to check operation of the hoist brake.

11. Check hoist operation by raising and lowering a load equal to the rated capacity of the hoist a few centimeters of the floor.

12. Check operation of the hook travel buffers. These operate in conjunction with the load limiter.

13. Check to see that the hoist is directly over the load for vertical lifting operations.

14. Check to see that the hoist is securely connected to the overhead crane, monorail, and trolley or supporting member.

15. Check to see that the load is securely attached to the hook, and that the hook safety latch is engaged.

16. Check to see that the load being lower can reach the floor before the chain stopper on the opposite end of the chain will be reached.

WARNING

- **Only allow personnel trained in safety and operation of this product to operate the hoist, hoist and trolley.**
- **The hoist is not designed or suitable for lifting, lowering or moving persons. Never lift loads over people.**
- **The hook latch is intended to retain loose slings or devices under slack conditions. Hook latches are not intended to support any load but to ensure load point in the hook is achieve.**

Hoist Controls

Pilot Pendent Control

The hoist is operated via a two button pilot pendent control. The two buttons control the lifting and lowering of the hoist. For hoists mounted on motorized trolleys a four button pilot pendent control is supplied which controls the horizontal movement of the trolley in addition to the lifting and lowering of the hoist. The pilot pendent control allows for precise spotting and variable speed control and has arrows indicating the direction of movement of the lower hook and the trolley. The harder the pendent buttons are pressed the faster the hoist or trolley will operate. When the buttons are released, the control valve shuts off the air supply to the hoist thereby applying the brake and stopping the hoist.

Direct Pendent Control

With this system, the main air supply to the hoist controlling lowering or lifting is regulated at the direct pendent handle. The further the control lever is rotated, the more air flows to the motor and the faster the hoist operates. Releasing the lever stops all air flow to the hoist and the brake will automatically be applied for hoist mounted on motorized trolleys a separate Direct Pendent is mounted alongside the hoist Direct Pendent.

Toggle (Cord) Control

To operate a toggle control hoist, pull on one of the chains attached to the control handle on the control block. The two handles are marked for lifting or lowering. The harder the chains are pulled the faster the hoist operates. When released, the control handle return to its neutral position and shuts off the air supply to the hoist, thereby applying the brake and stopping the hoist.
Please note that this type of control is not recommended for horizontal rigger operations as the control ropes or chains can easily be twisted in the load or load chains and result in no control of the air hoist.

Operation of Air Hoists fitted with Load Limiters

The load limiter torque slip clutch is factory set to operate at between 10% and 30% overload and is protected from tampering by a tamper resistant cover. Do not attempt to adjust load limiter unless certified by ATS2000 and correct weight is available.

The load limiter function operates on clutches which limits torque input. When in the overload condition, the load can still lowered to rectify the overload condition. The load limiter will be activate during lifting and lowering which will protect the load in over extending of the load chain.

Since the load limiting clutches operate on torque input this will operated within the allowable 30% overload limits as prescribed in SANS 1638:2008 at ANY air pressure.

WARNING

- **Avoid shock loads on the hoist.**
- **Do not leave the hoist unattended while any loads are suspended if it is not necessary.**
- **Avoid attempting to lower loads longer that the chain that is available.**

Inspection

ATS2000 recommends two types of inspection:

a) The frequent inspection performed by the operator as pre-work inspection.

b) The periodic inspections performed by personnel trained in the operation and repair of this hoist.

Careful inspection on a regular basis will reveal potentially dangerous conditions while still in the early stages, allowing corrective actions to be taken before the condition becomes dangerous.

Any deficiency revealed through inspection must be reported to an appointed person. A determination must be made as to whether a deficiency constitutes a safety hazard before resuming operation of the hoist.

Records and Reports

An inspection record should be maintained for each hoist, listing all points requiring periodic inspection. A written report should be made monthly on the condition of the critical parts of each hoist. These reports should be dated, signed by each person who performed the inspection, and kept on file where they are readily available to authorized personnel.

Frequent Inspection

On hoists in continuous service, frequent inspection should be made at the beginning of each shift. In addition, visual inspections should be conducted during regular service for any damage or evidence of malfunction.

1. ***Operation.***

   Check for visual signs or abnormal noises (grinding etc.) which could indicate a potential problem. Make sure all controls function properly and return to neutral when released. Check chain feed through the chain guides and undercarriage. If chain jams, wedges, jumps are excessively noisy or “clicks”, clean and lubricate the chain. If problem persists replace the chain sprockets or chain guide. Do not operate the hoist until all problems have been corrected.

2. ***Hooks.***

   Check for wear or damage, increased throat width, bent shank or twisting of the hook. Replace hooks which exceed the throat opening specified in Table 2 or exceed a 10 degrees twist (see Figure 4). If the hook latch snaps past the tip of the hook, the hook is sprung and must be replaced. Check hook support swivels for excessive clearance or damage. Ensure they swivel easily and smoothly.

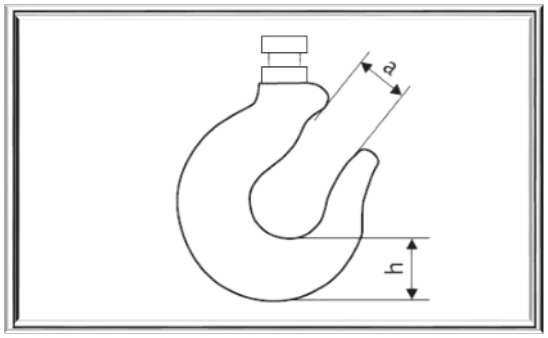
HOOK RATING	**Maximum** permissible hook opening dimension "a" (mm) **	**Minimum** permissible height dimension "h" (mm)
0.5 – 2 Ton	31	25.6
3 Ton	35.7	36.1
6 Ton	46	44.7
10 Ton	50.4	58.9

** If safety catch fitted, subtract the thickness of the safety catch from the maximum hook opening dim "a"

Hook dimensions and wear limits

3. ***Hook Travel Buffers.***

   The hook travel buffers are securely attached to either end of the load chain. When functioning as hook travel limits they operate in conjunction with the load limiter which stops the air motor when



   pulled against the hoist. If the buffers are pulled against the hoist and the hoist stops, release the controls and listen for the sound of the load limiter valve resetting as it exhausts a small amount of air.

4. ***Air System.***

   Visually inspect all connections, fittings, hoses and components for indication of air leaks. Repair any leaks found.

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5. ***Controls.***

   During operation of the hoist, check the response of the hoist to the pendent is smooth and not sticky. Ensure that the control handle switches to its maximum position in both directions. The control handle must return to neutral when released. If hoist responds slowly or movement is unsatisfactory, do not operate hoist until all deficiencies have been corrected. If fitted with an E-Stop button, ensure when activated hoist does not operate.

6. ***Hook Safety Latch.***

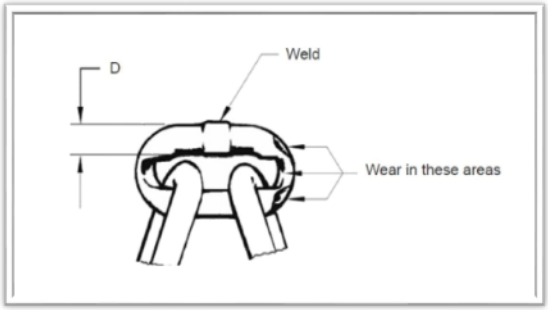
   Make sure the hook safety latch is present and operating properly. Replace if necessary.

CAUTION

- **Do not use hoist if hook safety latch is missing or damaged**

7. ***Load Chain.***

   Examine each of the links for bending, cracks in weld areas or shoulders, traverse nicks and gouges corrosion pits and chain wear, including bearing surfaces between chain links (see figure 5). Replace a chain that fails any of the inspections. Check chain lubrication and lubricate if necessary. Refer to "LOAD CHAIN" in "LUBRICASTION" section.



NOTICE

- **The full extent of load chain wear cannot be determined by visual inspection. At any indication of load chain wear inspect chain and chain wheel in accordance with instructions in "Periodic Inspection".**

8. ***Load Chain Reeving.***

   Ensure welds on upright links are away from driven load sheave. Reinstall chain if necessary. Make sure chain is not twisted or kinked. Adjust as required.

Periodic Inspection

Frequency of periodic inspection depends on the severity of usage:

NORMAL	HEAVY	SERVERE
Yearly	Biannually	Quarterly

NOTICE

- **Please note the requirements of the Occupational Health and Safety Act of South Africa (Act 85 of 1993), Driven Machinery (Regulation 18) Lifting Machines and Lifting Tackle regarding the examination and testing of lifting machines and lifting tackle.**

Disassembly may be required for HEAVY or SEVERE usage. Keep accumulative written records of periodic inspections to provide a basis for continuing evaluation. Inspect all the items in "Frequent Inspection". Also inspect the following:

1. ***Fasteners.***

   Check cap screws and nuts. Replace if missing or tighten if loose.

2. ***All Components.***

   Inspect for wear, damage, distortion, deformation and cleanliness. If external evidence indicates the need, disassemble. Check gears, shafts, bearing, load sheaves, chain guides, springs and covers. Replace worn or damaged parts. Clean, lubricate and reassemble.

3. **Hooks.**

   Inspect hooks carefully for cracks using magnetic particle or other suitable non-destructive testing methods. Inspect hook swivels. Tighten swivel bolts if necessary.

4. ***Load Sheaves.***

   Check for damage or excessive wear. Replace if necessary. Observe the action of the load chain feeding through the hoist. Do not operate a hoist unless the load chain feeds through the hoist and undercarriage smoothly and without audible clicking or other evidence of jamming, wedging or malfunctioning.

5. ***Motor.***

   If performance is poor, disassemble the motor and check for wear or damage to bearings, vanes, cylinder end plates and other parts. The parts should be cleaned, lubricated and reassembled. Replace worn or damaged parts.

6. ***Brake.***

   Raise a load equal to the rated capacity of the hoist about 200mm off the floor. Verify hoist holds the load without slipping. If slipping occurs, disassemble. Remove brake disc as described in the "MAINTENANCE" section. Check and clean the brake parts each time the hoist is dismantled. Replace the brake disc if the thickness is less than 5 mm.

7. ***Supporting Structure.***

   Check for distortion, wear and continued ability to support the load.

8. ***Trolley*** (If equipped)

   Check that the trolley wheels run properly on the beam and that the distance between wheel flanges exceeds the beam flange size by 4.5 to 6 mm. Check that wheels and rail are not excessively worn and inspect the side plates for opening up due to bending. Do not operate the hoist until any problems have been identified and corrected.

9. ***Nameplate.***

   Check for presence and legibility. Replace if necessary.

10. **Load Chain and Anchors.**

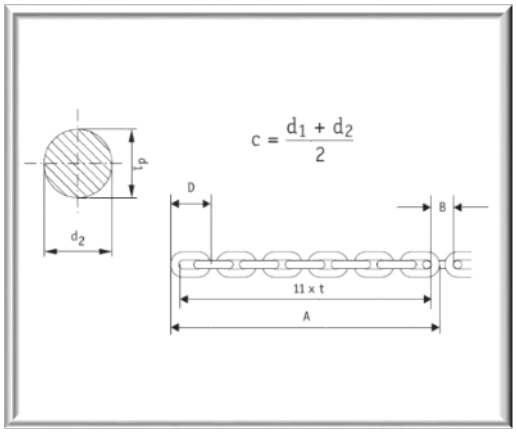
    Ensure both ends of the load chain are securely attached to the hook swivel or chain stopper. Secure if loose, repair if damaged, replace if missing.

11. ***Load Chain.***

    Measure the load chain for wear and stretching as shown below and compare to the allowable limits in Table 3. Take care to take the measurements on that part of the chain which comes into contact with the load sheave most often. If the measurements exceed the maximum values shown below, replace the chain. Always use the load chain recommended by ATS 2000 for the desired application.

Chain d x t	7x21	9x27	11.2x34	13x36	16x45
Dimension A max.	249.2	320.5		429.2	536
11 x t inside max	235.8	303.2		404.3	505.3
5 link inside max.			107.8		
Dimension B max.	22.1	28.4	35.8	37.9	47.4
Dimension C max.	6.3	8.1	10.1	11.7	14.4
Dimension D max.	36.1	46.4	57.8	63.6	79.3

Dimension in mm



12. ***Chain Bag / Container.***

    Check for damage or excessive wear and that chain container is securely attached to the hoist. Secure or replace if necessary. Ensure correct positioning of the chain bag.

Hoists Not in Regular Use

1. A hoist which has been idle for period of one month or more, but less than one year, should be given an inspection conforming with the requirements for "Frequent Inspection" prior to being placed into service.

2. A hoist which has been idle for a period of more than one year should be given an inspection conforming with the requirements of "Periodic Inspection" prior to being placed into service.

3. Standby hoist should be inspected at least biannually in accordance with the requirement of “Frequent Inspection”. In abnormal operating conditions hoists should be inspected at shorter intervals.

Filtration

Should the air line filtration not be integrated into the motor housing a proper high capacity filter is required with a 100 micron screening and should were possible include a water separator. Do not use tap water screens as they pass particles of between 0,25 - 0,50 mm which will cause excessive wear in the motor.

Lubrication

To ensure continued satisfactory operation of the hoist, all points requiring lubrication must be serviced with the correct lubricant at the proper time interval. Correct lubrication is one of the most important factors in maintaining efficient operation.

The lubrication intervals recommended in this manual are based on intermittent operation of the hoist eight hours each day, five days per week. If the hoist is operated almost continuously or more than the eight hours each day, more frequent lubrication will be required. Also, the lubricant types and change intervals are based on operation in an environment relatively fee of dust, moisture, and corrosive fumes. Use only those lubricants recommended. Failure to observe this precaution may result in damage to the hoist and/or its associated components.

Whenever ATSi INDU Hoist is dismantled for overhaul or replacement of parts, lubricate as follows:

1. Coat all motor parts with a light film of SAE 10W or 27 – 32 centistoke or good quality hydraulic oil before assembling.

CAUTION

- **Do not use automotive type detergent oil. Detergents will de-laminate the motor vanes and cause motor failure.**

2. Apply a coating of grease to all gearing before assembly. Neglect of proper lubrication will lead to bearing failure. The recommended greases are as follows: DIMOL GR-2-EP, CASTROL SHEEROL EP2 and SHELL ALVANIA EP2. If these specific greases are not available use an equivalent grease.

Load Chain

WARNING

- **Failure to maintain motor lubricator will reduce oil lubricating to the load chain no lubrication will result in rapid load chain and load sheave wear that can lead to chain failure resulting in severe injury, death or substantial property damage.**

1. Fill lubricator daily, or more frequently, depending on severity of service.
2. In a corrosive environment, lubricate more frequently than normal.
3. The exhausting air lubricates each link of the load chain continuously.
4. The chain will be cleaned by the exhaust air and blow off any dirt before it reaches the hoist load sheave.
5. Use ATS Blue Lube for filling the lubricators or SAE 10W or 27-32 centistoke oil.

Hook Assemblies

1. Lubricate the hook swivel and hook latch pivot points. Hook and latch should swivel/pivot freely.
2. Use SAE50 to 90 EP oil for hook lubrication.

Troubleshooting

This section provides the information necessary for troubleshooting the ATS INDU series of hoists. The troubleshooting guide provides a general outline of problems which could be experienced with normal use of the hoist. It lists the symptom, the possible cause, and the possible remedy for the trouble being experienced.

SYMPTOM	CAUSE	REMEDY
Hoist will not operate	No air supply to hoist, or too little volume of air or pressure.	Refer to "SPECIFICATIONS" section for correct quantity (m3/min) and minimum of 4 pressure (bar).
	Throttle valve or control handle sticking.	Check control handle, throttle valve for free movement.
	Pendent malfunction.	Check pressure at pendent. Minimum operating pressure in pendent line is 4 bar.
	Hoist is overloaded.	Reduce load to within rated capacity.
	Load Limiter clutch is slipping.	Reduce load weight.
	Motor is damage.	Repair or replace. See "MAINTENANCE" section.
	Brake is not releasing.	Check brake assembly release circuit, brake O-ring seals and pressure at the brake inlet. (2 bar minimum).
Load continues to move when hoist is stopped. "UP" direction.	Pendant valve or rope control valve is sticking or bypassing air.	Check Pendant control handle or Rope control valve for free movement or control valve for air leakage.
	Pendent lever sticking.	Check lever and restore free movement.
	Control spring faulty.	Check and refit control spring.
Load continues to move when hoist is stopped. "DOWN" direction.	Pendant valve or rope control valve is sticking or bypassing air.	Check Pendant control handle or Rope control valve for free movement.
	Brake is slipping	Check brake spring O-rings and brake disc linings for wear. See "MAINTENANCE" section.
	Hoist is overloaded	Reduce load to within rated capacity.
	Pendent Lever is sticking.	Check Pendent lever or Rope Control lever and restore free movement.
Hoist will not lift rated capacity.	Hoist is overloaded.	Reduce load to within rated capacity.
	No air supply to hoist or too little volume of air or pressure.	Check pressure at control valve inlet. Refer to "SPECIFICATIONS" section for correct quantity (m3/min) and pressure 4 Bar
	Pendent Control valve is restricted.	Check Pendent control lever or Rope Control valve for free movement.
	Exhaust restricted.	Inspect, clean and replace silencer disc in Pendent Control or motor silencer.
	Motor is damaged.	Check for worn motor bearing, cylinder, end plates and vanes.
Hook lowers, but will not raise.	No air supply to hoist, or too little volume and air pressure	Check air supply and connections, in air supply line.
	Hoist is overloaded.	Reduce load to within rated capacity.
	Pendent Control valve malfunction.	Check pressure at air inlet connection on pendent and the travel on the valve.
Hook can be raised but not lowered.	Low air pressure.	Check pressure at control valve inlet. Raise pressure to rated capacity.
	Pendent Control valve malfunction.	Check pressure at air inlet connection on pendent.
Load chain jumps on sheave or is making a snapping sound.	No oil on load chain.	Check Lubricator on motor which in turn lubricate the chain. See "LUBRICATION" section.
	Worn or rusted chain.	See "INSPECTION" to determine wear limit. Replace if necessary and lubricate frequently.
	Worn load sheave, chain crack etc.	Replace worn parts.
	Incorrectly reeved twisted load chain.	Check load chain is correctly reeved and is not twisted.

Maintenance

For best results use ATS INDU series of hoists parts illustration to follow sequence of stripping and assembly.

WARNING

- **Disconnect air before maintenance on the hoist while it is supporting a load.**
- **Shut off air system and depressurize air lines before performing any maintenance.**
- **Before performing maintenance, tag controls to indicate state of unit: DANGER – DO NOT OPERATE – EQUIPMENT BEING REPAIRED.**
- **Only allow personnel trained in the operation and service of this hoist to perform maintenance.**
- **After performing any maintenance on the hoist, conduct a proof load and braking test (125% of its rated capacity) as well as a dynamic performance test in accordance with SANS1639:2010, before returning the hoist to service.**

Load Chain Care

Keep the chain well lubricated as described in the "LUBRICATION" section. Never operate a hoist if the load chain does not run freely and smoothly into and out of the chain guides and load sheave, and that the chain splitter is in good condition or when it makes noises indicative or jamming, wedging or other malfunctions.

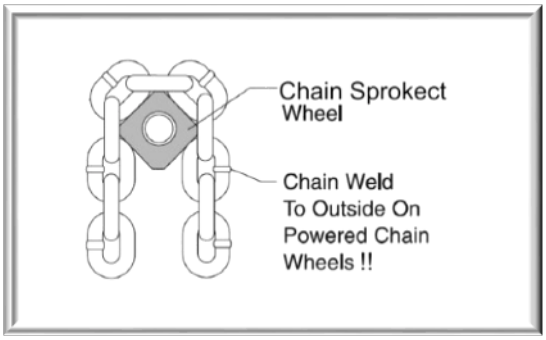
Chain Replacement

Refer to "Inspection" section for information on load chain inspection.

Excessive chain wear cannot be detected by casual observation. The chain is case hardened to a depth of 0.25 to 0.30 mm deep or Heat treated to Grade 80 specification, depending on application, however excessive wear will considerably reduce the strength of the chain. Further, the chain will no longer fit the load sheave properly, greatly increasing the chance of malfunction and chain breakage.

The load sheave will outlast several chains if the chain is replaces as recommended. The use of a worn chain will cause the load sheave to wear rapidly.

If the chain is visibly damaged, examine the load sheave and chain guides and chain stripper. Install a new load sheave & chain stripper if the old one is visibly worn. Install new centre piece guides if the old one is excessively worn, broken or distorted.



For Single Fall Hoists

1. Disconnect the slack end of the chain from its anchoring bolt on the side of the chain guide or remove the chain stopper and buffers.
2. Remove the hook from the other end of the chain by removing the bottom hook bolts. Remove the buffers.
3. Run the hoist slowly until the end of chain passes over the load sheave and comes out of the hoist.
4. Remove the brake housing by slacking the 3 brake housing screws. Remove the brake disc, brake piston and springs as per "BRAKE STRIPING PROCEDURE".
5. Push a piece of steel wire through the chain passage in the chain guide. Attach this piece of wire to the last link of the chain.
6. Pull the wire so that the first link lies flat I the load sheave pocket. Also ensure that the welded section faces outwards form the load sheave.
7. Turn the brake disc coupler by hand until the chain has fed through the chain guide.
8. Replace the buffer. Attach the slack end of the chain to the sprocket housing/chain guide (if applicable) taking care not to twist the chain or replace the chain stopper.
9. Replace the buffer and attach the chain to the hook swivel using a new nut to secure the bottom hook pin.

For Double, Triple, and Quad Fall Hoists

1. Install the chain as in Steps 1 through 9 of the instructions for single fall hoists.
2. Ensure that the chain is straight and not twisted.
3. For double fall hoists feed the end of the chain through the undercarriage making sure that it seats on the load sheave. The welded section of the chain must face outwards from the undercarriage load sheave.
4. Keeping the chain straight, replace the buffers and attach the free end of the chain to the chain sprocket housing using the doubling down bolt (double fall hoists) or the undercarriage.

WARNING

- **A twisted chain can jam as it passes over the load sheave, which can result in damage to the hoist or even breakage of the chain causing severe injury, death or substantial property damage.**

Hoist Dismantling

WARNING

- **Disconnect the air supply hose before performing any maintenance or repairs on this hoist.**

1. Check fault list for problem solving.

2. Do not disassemble the hoist any further than necessary to replace or repair damaged parts, unless major service is due.

3. Whenever grasping a component in a vice, always use aluminum covered or copper covered vice jaws to protect the surface of the component and help prevent damage. This is particularly true of threaded members and housings.

4. Do not disassemble this hoist unless you have a complete set of new gaskets, O-rings and seals on hand for replacement. These are available in the Overhaul Seal and Gasket Kit and parts list.

5. Do not attempt to recondition by washing out sealed bearings. We recommend that all bearing, vanes & O-rings be replaced when the hoist is reassembled.

Dismantle of the Control Valve (Cord / Toggle Control).

1. Unscrew the four bolts attaching the Control valve to the motor housing. Remove the gasket.

2. Examine all components for wear, replacing damaged or worn components. Replace all gaskets and O-rings before re-assembly.

3. Remove all sharp edges and burrs from components. Wipe all components with SAE 10W oil before re-assembling in the reverse order to stripping.

Dismantle of the Control Valve (Direct Pendent Control).

1. Remove the three hoses from the throttle hose connector.

2. Unscrew the four bolts attaching the throttle hose connector to the motor housing. Remove the gasket.

3. Examine all components for wear, replacing damaged or worn components. Replace all gaskets and O-rings before re-assembly.

4. Remove all sharp edges and burrs from components. Wipe all components with SAE 10W oil before re-assembling in the reverse order to stripping.

Dismantle of the Control Valve (Pilot Pendent Control).

1. If the hoist has a pendent control, remove the three pendent control hoses.

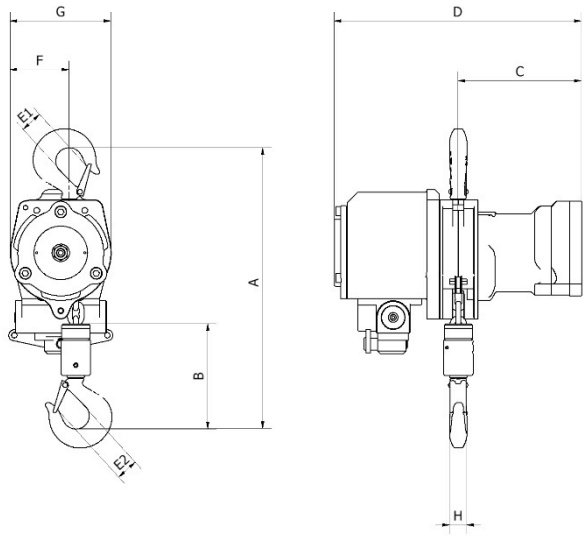
2. Unscrew the four bolts attaching the control valve to the motor housing. Remove the control valve from the hoist. Remove the gasket.

3. Examine all components for wear, replacing damaged or worn components. Replace all gaskets and O-rings before re-assembly.

4. Remove all sharp edges and burrs from components. Wipe all components with SAE 10W oil before re-assembling in the reverse order to stripping.

Technical Data:					
Lifting capacity	Ton	0.25	0.5	1*	2*
Number of Falls of Chain		1	1	1	1
Motor Power Output	kW	1.4	1.4	1.4	1.4
Weight with standard lift, rope contro	kg	25	25	27	34
Weight of 1meter of chain	kg	1	1	1	1.65
Chain dimension	mm	7 x 21	7 x 21	7 x 21	9 x 27
Air pressure	bar	4 - 6	4 - 6	4 - 6	4 - 6
Air consumption at full load	m^3/min	1.75	1.75	1.75	1.75
Air hose connection		3/4" BSP			
Air hose dimension		min 13mm (1/2")			
Lifting speed at full load	m/min	27	19.5	6.6	8.8
Lifting speed without load	m/min	37	37.5	11	13.6
Lowering speed with full load	m/min	30	30	11	13
Standard lift	m	3	3	3	3
Length of control for standard lift	m	2	2	2	2
Noise level	84 dB A @ 1m				

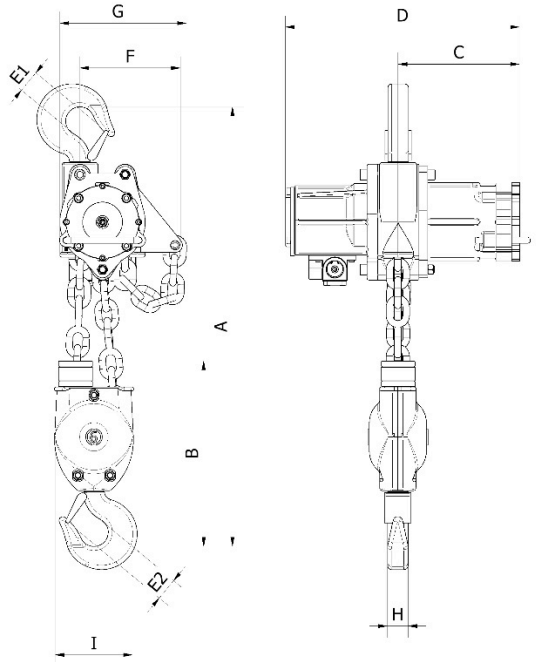
* Load Limiters fitted Standard



Dimensions					
Type		0.25 ton	0.5 ton	1 ton	2 ton
A min. headroom	mm	347	347	347	361
B	mm	149	149	149	154
C	mm	99	99	174	202
D	mm	274	274	350	382
E1	mm	23	23	23	23
E2	mm	23	23	23	23
G max. width	mm	143	143	143	143
H Hook width	mm	22	22	22	22

Technical Data:						
Lifting capacity	Ton	3*	4.2*	5*	6*	10*
Number of falls of chain		1	1	1	2	2
Motor power output	kW	3.2	3.2	3.2	3.2	3.2
Weight with rope control and standard lift	kg	57	72	80	82	110
Weight of 1meter of chain	kg	2.7	3.8	5.8	3.8	5.8
Chain dimension	mm	11.2 x 34	13 x 36	16 x 45	11.2 x 34	16 x 45
Air pressure	bar	4 -6	4 -6	4 -6	4 -6	4 -6
Air consumption at full load	m^3/min	1.75	1.75	1.75	1.75	1.75
Air hose connection		3/4" BSP				
Air hose dimension		19mm -25mm (3/4")				
Lifting speed at full load	m/min	4.5	3.6	2.6	2.3	1.3
Lifting speed without load	m/min	5.8	5	5.6	3	2.8
Lowering speed with full load	m/min	6.2	5.8	7.2	3.2	2.4
Standard lift	m	3	3	3	3	3
Length of control for standard lift	m	2	2	2	2	2
Noise level	84 dB A @ 1m					

* Load Limiters fitted Standard



Dimensions						
Type		3 ton	4.2 ton	5 ton	6 ton	10 ton
A min. headroom	mm	504	575	609	646	802
B	mm	102	272	285	357	434
C	mm	234	266	271	266	271
D	mm	451	482	382	451	493
E1	mm	40	40	40	40	53
E2	mm	30	40	40	40	53
G maximum width	mm	231	231	294	231	294
H hook width	mm	30	37	37	37	46
I	mm				150	200

Proudly manufactured in South Africa within an ISO facility

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Made in South Africa
Since 1976

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Form ATS-ATEX1
Edition 2
August 2014

PNEUMATIC HOISTS and TROLLEYS
Intended for use in Potentially Explosive Atmospheres

The EC Declaration of Conformity in this manual states that these Pneumatic Hoist and Trolley models are in compliance with European Community Directive 94/9/EC for equipment intended for use in potentially explosive atmospheres, commonly referred to as the ATEX Directive. Standard Pneumatic Hoist and Trolley models conform to and are marked for use as defined by ATEX designation:

Ex II 2 GD IIA T4 (X) / Ex II 3 GD IIB T4 (X)

Standard version ATS 2000 air hoists are category 2 devices Guideline 94/9/EC, for use in zone 1 and 2 for gases of explosion group IIA. These devices are also suitable for use in zone 2, in the presence of gases of explosion group IIB, provided that the substances hydrogen sulphide and ethylene oxide can be excluded and additionally in zones 21 and 22 for dusts with glow temperatures above 210° C or ignition temperatures above 202° C, provided that no light metal or other impact-sensitive dusts are present.

Pneumatic Hoist and Trolley models with the additional “special spark proof design” package of spark protection conform to and are marked for use as defined by ATEX designation:

Ex II 2 GD IIC T4 (X) / Ex II 2 GD IIB T4 (X)

ATS 2000 hoists of the version “with special spark proof design protection” (SP) satisfy additional explosion protection requirements. With the exception of carbon disulphide (temperature class T6), they can be used in presence of all gases in zones 1 and 2 and dusts with glow temperatures above 210° or ignition temperatures above 202° in zones 21 and 22, and can be marked. For further operating conditions, see instructions for safe operation.

ATS 2000 trolley running gear “with Special spark proof design protection”
For use in zone 1 in the presence of gases in explosion group IIC, bronzed running wheels or running wheels made of bronze are also used. The highest possible designation for this version (SPR) is **EX II2 GD IIC T4 (X)** (the same as for ATS2000 hoists “with Special spark proof design protection”).

These ATEX designations define the applications, the type and duration of the potentially explosive atmospheres, the type of protection, and the maximum surface temperature.
Hoists intended to be used in underground parts of mines as well as those parts of surface installations of such mines endangered by firedamp and/or combustible dust are marked for use as defined by ATEX designation:

Ex I M2 IIB T4 (X)

The **X** indicates that additional special conditions are required for safe application, operation and/or maintenance of these tools when used in potentially explosive atmospheres.

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Since 1976

These ATEX designations define the applications, type and duration of the potentially explosive atmospheres, type of protection, and the maximum surface temperature.

This symbol indicates certification for use in an explosive atmosphere and is followed by other symbols indicating the details of that certified use.

I- Indicates Equipment Group I - Mine use.

II- Indicates Equipment Group II - Non-Mine Use.

2- Indicates Equipment Category 2 - Equipment Category 2 is intended for use in areas in which explosive atmospheres caused by gases, vapours, mists or air/dust mixtures are only occasionally likely to occur. Protection level is very high during normal use and in the event of frequently occurring disturbances or equipment faults.

3- Indicates Equipment Category 3 - Equipment Category 3 is intended for use in areas in which explosive atmospheres caused by gases, vapours, mists or air/dust mixtures are unlikely to occur. Protection level is normal during intended use and in the event of infrequently occurring disturbances or equipment faults.

M2- These products are intended to be de-energized in the event of an explosive atmosphere. Protection methods must be incorporated to provide a high level of safety.

G - Indicates evaluation for explosive atmospheres caused by gases, vapours or mists.

D - Indicates evaluation for explosive atmospheres caused by dust.

T - Indicates the maximum surface temperature Class.

X - Indicates that there are special conditions for safe application, installation, operation and maintenance which must be followed for the certification to apply.

This designation refers to explosion protection details in the operation manual.

EX II 2 GD IIA T4 (X) /II 3 GD IIB T4 (X) or **EX II 3 GD IIA T4 (X):**

This designation does not permit use in the presence of the extremely flammable substance hydrogen sulphide and ethylene oxide or in the presence of light metal or other impact-sensitive dusts, or in the presence of dusts with glow temperatures below 210° C or ignition temperatures below 202° C. The permissible ambient temperature range (Ta) extends from – 20° C to + 70°C.

At carrying capacities above 20 tons, continuous operation of the hoists is not permitted if the ambient temperature exceeds 50° C. In these cases, cooling times must be observed in order not to exceed the permissible surface temperatures.

EX II 2 IIC T4 (X) or **EX II 2 GB IIB T4 (X):**

The permissible ambient temperature range (Ta) extends form – 20° C to + 70° c. At carrying capacities above 20 tons, continuous operation of the hoists is not permitted if the ambient temperature exceeds 50° C. In these cases, cooling times must be observed in order not to exceed the permissible surface temperatures.

NOTICE

• All Special Conditions must be followed for this product to conform to the ATEX Directive and for the ATEX Declaration of Conformity to be valid.

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Special Conditions
for Safe Applications, Operations and Maintenance

⚠ WARNING

- Non-compliance with any of these Special Conditions could result in ignition of explosive atmospheres.

A. Refer to ATS 2000's specification supplied with the pneumatic hoist or trolley for proper filtering and lubrication in air supply line.
B. Proper lubrication and maintenance are required to prevent premature component failures. Follow the recommendations in the lubrication and maintenance sections of the manual supplied with the hoist or trolley.
C. Air pressure above 7 bar (700kPa) at the inlet may result in a source of ignition caused by premature failure of bearings or other components due to excessive speed, output torque or force.
D. Do not operate the hoist or trolley with the air pressure at the inlet below 4.5 bar (450kPa). Low air pressure to the hoist or trolley may cause the brake to partially engage during operation resulting in elevated temperatures.
E. The entire hoist system, from the trolley or load hook to the bottom hook, the control pendant and the payload shall be earth grounded at all times to prevent ignition hazards from electrostatic discharge. A resistance to earth of less than 10^6 Ohms is required. Do not disconnect or insulate any grounding or strain relief cables. When using a nonconductive sling or harness or a nonconductive link or barrier an independent ground must be applied.
F. Never use a Standard pneumatic hoist or trolley when there is any possibility that a gas like hydrogen sulphide, ethylene oxide, or Carbon Disulphide, or light metal dusts or dusts sensitive to impact may be present. These atmospheres cause a high probability of explosion.
G. Never use a Special Spark Proof Designed pneumatic hoist or trolley when there is any possibility that a gas like Carbon Disulphide, or light metal dusts or dusts sensitive to impact may be present. These atmospheres cause a high probability of explosion.
H. Do not allow hard contact of the bottom block, hook, and load chain or pendant control against other objects. The impact of any hoist or trolley component beyond normal use may cause an ignition hazard from sparks.
I. The maximum expected surface temperature of the hoist or trolley is 135° C measured during brake malfunction. Inspect the hoist or trolley for air leaks and proper brake engagement, prior to operation.
J. Check for abnormally elevated temperatures during operation that may be an indication of overload or potential failure of bearings, brake or other mechanical components.
K. If elevated temperatures or elevated vibration levels are detected shut the hoist and/or trolley off and discontinue its use until it can be inspected and/or repaired.
L. Do not use a pneumatic hoist or trolley that exhibits rust or rust films that may come in contact with aluminium, magnesium or their corresponding alloys.
M. Do not perform maintenance or repairs in an area where explosive atmospheres are present.
N. Do not clean or lubricate a pneumatic hoist or trolley with flammable or volatile liquids such as kerosene, diesel or jet fuel. A potentially explosive atmosphere may be created.
O. Hoists and trolleys with ATEX certification are intended for general industrial material handling use in conformance to their labelled designation and these special conditions. Special assessments, for other specific applications requiring increased protection, should be requested by written inquiry to ATS 2000 (PTY) LTD.

NOTICE

To safely use this product and conform to the provisions of the Machinery Directive 98/37/EC, all instructions given in the accompanying literature, in addition to all conditions, notices and warnings given herein, must be followed.

Refer to appropriate winch Parts, Operation and Maintenance Manuals for additional installation, inspection and operation instructions.

⚠ WARNING

- **Pneumatic Hoists use oil to prevent excessive heat build-up and to prevent wear that could cause sparks. Oil/ Grease levels must be properly maintained.**

Inspection

1. Check oil level in motor Lubricator daily.
2. At the beginning of each shift, operate the hoist in both directions without a load. Ensure the motor runs free and brake does not drag.
3. Check grease level in gearbox every 3 months.
4. Keep hoist housings clean of dust and dirt build up which can cause heat build-up.

⚠ WARNING

- **A worn or improperly functioning brake may cause excessive heat build-up or sparks.**

Operation

1. When lowering loads near the hoist's rated load and at very slow speeds, monitor the temperature of the brake housing. This load/speed combination may result in automatic brake dragging, which could cause heat build-up. Indications that the heat build-up on the brake is excessive are:
    a) Housing surface temperatures in excess of 120° C
    b) Visible indications of hot paint, such as blisters or scorching
    c) The smell of hot oil or burning paint
2. Stop all operations any time a hot brake is detected.
3. Ensure load chain piles naturally in chain bucket. Load chain that does not pile naturally can chafe excessively, leading to sparks.

ATS 2000 (PTY) LTD
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2018
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WYNBURG
SANDTON
Made in South Africa
Since 1976

Service Notes

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DECLARATION OF CONFORMITY

Supplier's Name: **ATS2000 (PTY) LTD**	*Address:***708 OLD PRETORIA MAIN ROAD, WYNBERG, SANDTON**

Declare under our sole responsibility that the product: **ATS 2000 Series Air Chain Hoists / Trolleys**

Model: **ATSi, Rigga**

To which this declaration relates, is in compliance with provisions of Directives:
2006/42/EC (Machinery), 94/9/EC (ATEX), as well as SANS 1638, ASME B30.16

By using the following Principle Standards:
EN 292-1; EN 292-2; EN 418;EN 983; F.E.M. 1.001; F.E.M. 9.511; EN 13463-1; pr EN 13463-5; EN 1127-1

Serial Number Range: **9012 and up**	Date: **August 2014**

Approved By:

Glenton W Rebello – ATS 2000 (PTY) LTD. (South Africa)
Managing Director

This operation manual edition 01/2015, covers maintenance and operation of the following ATS Trolleys:

- Manual trolleys
- Reel chain trolleys
- Motorized trolleys

It must be read carefully and in its entirety before operating any trolley.

For trolleys with a built-in or suspended hoist, for motorized trolleys and for hoist systems, this manual is only valid together with the operation manual for the respective hoist.

Serial No.

Please enter the Serial No. of your ATS trolley here. It can be found with the delivery documents or on the nameplate on the motor cover.

THIS MANUAL MUST BE READ BEFORE USING OR REPAIRING THESE PRODUCTS.

This manual contains important safety, installation, operation, and maintenance and repair information. Make this manual available to all persons responsible for the operation, installation, maintenance and repair of these products.

Do not use this hoist for lifting, supporting, or transporting people or lifting or supporting loads over people.

Always operate, inspect and maintain this hoist in accordance with South African Bureau of Standards Specification number SANS1638:2008 pneumatically powered chain hoists and SANS 1639:2010 Reconditioned pneumatically powered chain hoists and any other safety codes or procedures relevant to the industry in which the hoist is being used. Testing of pneumatically powered chain hoists must only be carried out by the competent person contemplated in SANS 1639:2010.

For Hoists used outside of South Africa:

It is the responsibility of the owner/user to install, inspect, test, maintain, and operate a hoist in accordance with ANSI/ASME B30.16, "Safety Standard for Overhead Hoists", OSHA regulations. If the hoist is installed as part of a

total lifting system, such as an overhead crane or monorail, it is also the responsibility of the owner/user to comply with the applicable ANSI/ASME B30 volume that addresses that type of equipment.

It is the responsibility of the owner/user to have all personnel that will install, inspect, test, maintain, and operate a hoist read the contents of this manual and applicable portions of ANSI/ASME B30.16, "Safety Standard for Overhead Hoists" and OSHA Regulations. If the trolley is installed as part of a total lifting system, such as an overhead crane, the applicable ANSI/ASME B30 volume that addresses that type of equipment must also be read by all personnel.

If the trolley owner/user requires additional information, or if any information in the manual is not clear, contact

Harrington or the distributor of the hoist. Do not install, inspect, test, maintain, or operate this hoist unless this information is fully understood.

A regular schedule of inspection of the hoist in accordance with the requirements of ANSI/ASME B30.16 should be established and records maintained.

Preface

ATS2000 (PTY) LTD warrants to the user its hoists, and other products to be free from defects in material and workmanship for a period of one year from the date of purchase.

ATS2000 will repair, without cost to the user, any product found to be defective, including parts and labor charges, or at ATS2000's option, will replace such products or refund the purchase price less a reasonable allowance for handling in exchange for the product. Repair and replacements are warranted for the remainder of the original warranty period.

If any product proves defective within its original one year warranty period, it shall be returned to ATS2000 (PTY) LTD with proof of purchase and the original test certificate.

This warranty does not apply to products which ATS2000 has determined to have been misused or abused, improperly maintained by the user, or where the malfunction or defect can be attributed to the use of non-genuine ATS2000 parts.

ATS2000 (PTY) LTD makes no other warranty and its maximum liability is limited to the purchase price of the product and in no event will ATS2000 (PTY) LTD. be liable for any consequential, indirect, incidental or special damages of any nature arising from the sale or use of the product whether based on contract or otherwise.

It is ATS2000 (PTY) LTD policy to promote safety of all persons and equipment in the workplace. All equipment manufactured is thoroughly checked, packed and inspected before dispatch. Any loss or damage which occurs during shipment while en-route must be reported to ATS2000 immediately. Should any item be delivered to you in apparent good condition, but upon opening the container, loss or damage has taken place while in transit; notify ATS2000 (PTY) LTD immediately. All transport costs will be for the account of the user.

These instructions are prepared by ATS2000 (PTY) LTD for the purpose of maintenance, repair and the use of its air hoists.

No responsibility for failure of equipment due to manufacturing procedure will be assumed if these instructions are not carried out. Only original ATS2000 supplied spares are to be used in all repairs.

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SAFETY INFORMATION

This manual will refer to existing legal requirements and engineering practices as known when this document was written. Should any such legislation or practices change or be expanded upon then due consideration must be taken. Various standards have been used to assist in compiling this document and will be listed where applicable.

The use of lifting equipment is subject to certain hazards that cannot be overcome by mechanical means but only by the exercise of intelligence, care and common sense. It is therefore essential that personnel involved in the use and operation of equipment must be competent, careful, physically and mentally qualified, and trained in the safe operation of equipment and the handling of the loads. Serious hazards are overloading, dropping or slipping of the load caused by improper hitching or slinging, obstructing the free passage of the load and using equipment for a purpose for which it was not intended or designed. Such actions can cause serious injury or death.

Operators of ATS2000 Hoists are also under obligation to ensure safe and hazard-free operation. This can be achieved through the following measures:

- Keep the operation manuals available at the hoist operating site
- Perform regular training
- Perform regular inspections (at least once annually)
- Implement an inspection log and make regular entries
- Regularly check personnel for safety and hazard awareness during work.

ATS2000 (PTY) LTD fully realizes the importance of proper design factors, minimum and maximum sizes and other limiting dimensions of the chain and its fastenings, sprockets and similar equipment all of which are designed with safety in mind.

The condition of the equipment or material can vary depending on environmental factors. This may result in increased corrosion and/or wear. It is in light of this that the hoist be maintained and repaired under the supervision of a competent person. This person must be:

1. Qualified by virtue of his knowledge, training, skills and experience to organize the work and its performance.
2. Familiar with the legal requirements which apply to the work to be performed.
3. Trained to recognize any potential or actual danger to health and safety in the performance of the work.

The instructions given in this manual must be interpreted accordingly and sound judgment used in determining their application. This operation manual is intended to help the operator to become familiar with ATS2000 trolleys and how to use them properly.

This operation manual contains important information for the safe, proper and efficient operation of ATS2000 air hoists. Observance of the manual helps to avoid hazardous situations, to reduce repair costs and downtime and to ensure the specified service life of the ATS2000 air hoists.

Always keep the manual readily available at the location where the ATS2000 trolley is being used.

All persons charged with operating, maintaining or repairing ATS2000 trolleys must read and follow the instructions in this manual.

DANGER, WARNING, CAUTION & NOTICE

Throughout this manual there are steps and procedures which, if not followed, may result in an injury. The following signal words are used to identify the level of potential hazard.

Danger — Danger is used to indicate the presence of hazard which will cause ***severe*** injury, death or substantial property damage if the warning is ignored.

Warning — Warning is used to indicate the presence of a hazard which ***can*** cause ***severe*** injury, death, or substantial property damage if the warning is ignored.

Caution — Caution is used to indicate the presence of a hazard which ***will*** or ***can*** cause minor injury or property damage if the warning is ignored.

Notice — Notice is used to notify people of installation, operation, or maintenance information which are important but not hazard-related.

SAFETY SUMMARY

Warning

Do not use this trolley or any equipment attached to it for lifting, supporting, or transporting people or lifting or supporting loads over people.

ATS INDU series of trolleys are designed to provide a MINIMUM of 5 to 1 safety factor. It is the responsibility of the customer to ensure that the structure to which the hoist is attached and any load attaching devices are capable of handling the static and dynamic loads imposed on the structure by the hoist and its attachments when lifting the rated load. If in doubt, consult a registered professional structural engineer.

Notice

Lifting equipment is subject to different regulations in each country. These regulations may not be specified in this manual.

Whenever a conflict arises between the contents of this manual and any other applicable legislation, standard or procedure, the more stringent of the two must be applied.

The Occupational Health and Safety Act and Mine Health and Safety Act and other recognized safety sources make a common point: Employees who work near cranes or assist in hooking on or arranging a load should be instructed to keep out from under the load. From a safety standpoint, one factor is paramount: conduct all lifting operations in such a manner that if there were an equipment failure, no personnel would be injured. This means keep out from under a raised load and keep out of the intended path of any load.

ATS 2000 industrial and mining air hoists are manufactured in accordance with the latest ISO9001 standards.

The Occupational Safety and Health Act of 1993, section 10 states:

1. Any person who designs, manufactures, imports, sells or supplies any article for use at work shall ensure, as far as is reasonably practicable, that the article is safe and without risks to health when properly used and that it complies with all prescribed requirements.
2. Any person who erects or installs any article for use at work on or in any premises shall ensure, as far as is reasonably practicable, that nothing about the manner in which it is erected or installed makes it unsafe or creates a risk to health when properly used.
3. Any person who manufactures, imports, sells or supplies any substance for use at work shall –
    a. ensure, as far as is reasonably practicable, that the substance is safe and without risks to health when properly used; and
    b. take such steps as may be necessary to ensure that information is available with regard to the use of the substance at work, the risks to health and safety associated with such substance, the conditions necessary to ensure that the substance will by safe and without risks to health when properly used and the procedures to be followed in the case of an accident involving such substance.
4. Where a person designs, manufactures, imports, sells, or supplies an article or substance for or to another person, and that other person, and that other person undertakes in writing to take specified steps sufficient to ensure, as far as is reasonable practicable, that the article or substance will comply with all prescribed requirements and will be safe and without risks to health when properly used, the undertaking shall have the effect of relieving the first mentioned person from the duty imposed upon him by this section to such an extent as may be reasonable having regard to the terms of the undertaking.
5. It is the owner's and user's responsibility to determine the suitability of a product for any particular use. It is recommended that all applicable industry, trade association and legislation be checked. Read all operation instructions and warnings before operation.

This manual has been produced by **ATS 2000 (Pty) Ltd.** to provide agents, fitters, and company personnel with the information required to install, operate, maintain and repair the products described herein.

It is extremely important that fitters and operators be familiar with the servicing procedures of these products, or similar products, and is physically capable of conducting the procedures. These personnel shall have a general working knowledge that includes:

1. Proper and safe use and application of fitter's common hand tools as well as special or recommended tools.
2. Safety procedures, precautions and work habits established by accepted industry standards.

ATS 2000 (Pty) Ltd. cannot know of, nor provide all the procedures by which product operations or repairs may be conducted and the hazards and/or results of each method. If operation or maintenance procedures not specifically recommended by the manufacturer are conducted, it must be ensured that product safety is not endangered by the actions taken. If unsure of an operation or maintenance procedure or step, personnel should place the product in a safe condition and contact supervisors and/or the factory for technical assistance.

Identification

The nameplate mounted on the side plate identifies the type of ATS2000 trolley and contains important rating data. If you have any questions concerning the operation of ATS2000 trolleys which are not addressed in this operation manual, please contact us at the following address:

ATS2000 (PTY) Ltd

708 Pretoria Main Road

Wynberg

Sandton

South Africa

Phone +27 11 887 2605

Fax +27 11 440 5382

E-mail: GlenR@ats2000.co.za

MAIN COMPONENTS

ATS2000 trolleys and running gears consist of the following main components:

- Side plates
- Rolling wheels
- Width spacers
- Load bolts/clevis load bar
- Air motor drive, reel chain drive (fore running wheels or rack and pinion. Exception: no drive with manual trolleys).

PRODUCT DESCRIPTION

To traverse loads, ATS2000 air hoists can be suspended or built into ATS2000 trolleys. The air hoist is suspended with its upper hook in the load bolt or load eye of the trolley. Built-in means that the hoist is rigidly mounted into the trolley by means of a twist-proof load eye.

ATS2000 lifting gear and low headroom trolleys have this rigid connection only. For ultra-low (UL) configurations please see the UL Installation and operation manual.

ATS2000 trolleys are moved according to their construction:

- Manual trolleys by pushing or pulling by hand (on hooks and/or load)
- Reel chain trolleys by winding or unwinding the reel chain
- Motorized trolleys by actuating the control of the traversing motor

The operating pressure of the traversing motors is adapted in accordance with the operating pressure of the corresponding hoist (see nameplate). ATS2000 trolleys are designed in accordance with DIN15018 and correspond to stress group B4, lifting group H2. They are suitable for girders according to DIN 1025 or similar types of girder.

The track width of the trolleys above 2 tons carrying capacity is adjusted to the girder profile given by the customer in the order sheet.

Note: The track width of some ATS2000 trolleys can be adjusted within a certain range. If you wish to operate the trolley on a girder profile different to that originally specified, please contact ATS 2000 (PTY) Ltd.

ATS2000 trolleys are fitted with anti-climb and anti-drop devices. These form-fitting devices are additional safety measures and prevent the trolley from disengaging from the girder irrespective of the function of the running wheels, and from climbing the girder flange.

The minimum beam curve radius can be seen in the attached technical data sheet.

Special ATS2000 trolley models can be delivered with:

- Extra low height for low headroom trolley
- Rack-and-pinion drive for form-fitting power transmission
- Locking device for fixing in a certain position
- Two travel speeds
- Infinitely variable travel speed
- Pneumatic end switches for limiting the movement increased spark protection (as described below) in case of especially high requirements for explosion protection
- Cleaning of the exhaust air by filter silencers
- Throttle control for reducing the maximum travel speed

INTENDED USE

ATS 2000 trolleys in combination with ATS 2000 air hoists are intended to be used exclusively for lifting and lowering loads and for their horizontal movement above floor.

Any other use or use outside these stipulations is deemed to be impermissible. For applications requiring this type of use please consider the ATS 2000 range of winches and the ATS Rigga™ range of hoists. ATS 2000 cannot be held liable for any damage resulting from incorrect usage. The entire risk is borne by the operator.

The following situations, among others, are regarded as improper use:

- Exceeding the permitted load-carrying capacity
- Oblique pulling of loads
- Sliding loads
- Detaching, dragging or pulling of loads
- Catching of falling loads
- Carrying people
- Jog control over longer distances
- Switching to the opposite direction with load in motion
- Operation reaching of the end stop

See also - RULES FOR THE SAFE OPERATION OF TROLLEYS Page 12

Intended use also includes observance of the operation manual and compliance with the inspection and maintenance conditions.

OPERATING CONDITIONS

ATS2000 Air Hoists are extremely robust and require little maintenance. They are suitable for use in explosion-hazardous areas (see rating on hoist for details), as well as in areas with increased concentrations of soot and dust, high humidity and at ambient temperatures of – 20° C up to approx. + 70° C if they are not heated above this level due to external influences. The thermal endurance of chains and hooks is + 150° C.

Caution

When touching metallic hand controls which are colder than 0° C, skin could freeze within a few seconds, and at temperatures above 43° C, burns may occur. As a protective measure, please wear suitable gloves.

For stationary outdoor operation, hoists must be protected against weathering and the maintenance intervals must be reduced.

Depending upon the version, ATS2000 Air Hoists must be operated at a system pressure of 4 bar or 6 bar (see information on the nameplate). If the system pressure is too low, important functions of the hoist will be impaired:

- The brake will drag and is thus subject to a high degree of wear. An impermissibly high degree of warming could take place.
- The controls become noticeably less sensitive.

Danger

Warning against excessive system pressures
Operating with excessive system pressures results in danger due to overloading. Therefore, the pressure must be limited to that specified on the nameplate.

ATS2000 Air Hoists must be operated with a sufficiently clean and dry air supply. The air supply must fulfil the following quality requirements:

- Particle size less than 40 am
- Particle density less than 10 mg/m³
  (Corresponds to Class 7 in accordance with ISO 8573-1:2001)

Order to provide adequate compressed air quality, operation with a service unit is recommended. An oiler is not required in the service unity, as the motor is provided with internal permanent lubrication.

Also see - LUBRICATION Page 11

Notice

Do not operate ATS2000 Air Hoists with other gases.

With moist air or at ambient temperatures at or below 0° C, there is danger of icing in the motor. Icing can be prevented by:

- The use of an upstream air dryer
- Adding anti-icing agent to the lubrication oil (depending upon moisture content of compressed air)

TRANSPORT AND STORAGE

If you wish to transport your ATS2000 Air Hoist to another site, please observe the following points:

- Carefully dismount trolley.
- Set the entire hoist down carefully; do not allow it to drop. For weights see the technical data sheet supplied with the unit
- Lay control and supply hoses together in such a way that they are not kinked.
- Ensure that the controls are not damaged. (Risk of malfunction).
- Reel in the hoist chain in such a way that loops cannot form and the chain cannot become twisted.
- Secure the chain.

STORAGE CONDITIONS

BREAKS IN OPERATION

- In the case of longer operational breaks, coat the chain and hook with a light oil film.
- Motor conservation: for storage run a small amount of ATS Blue Line oil through the motor to coat the internal components.

STORAGE

- If the hoist is to be stored for a long time, spray anti corrosion spray or SAE 10W or 27-32 centistoke oil into the air inlet port and run the hoist slowly for a few seconds. This will compensate for the slight delay of the oil coming from the lubricator, and stop moisture rusting the bearings.
- Plug hoist air inlet port.
- Always store the hoist in a no load condition.
- Wipe off all dirt and water.
- Oil the load chain, hook pins and hook latch.
- Store the hoist in a clean dry environment.
- Before returning the hoist to service, follow instructions for hoists not in regular service in the "INSPECTION" section.

INITIAL OPERATION

The four most important aspects of hoist operation are:

1. Follow all safety instructions when operating hoist
2. Allow only suitably trained personnel to operate the hoist
3. Subject each hoist to a regular inspection and maintenance as outlined in this manual under the section 'Inspection'
4. Be aware of the hoist capacity and weight of load at all times.

Danger

- Operators must be physically competent
- Operators must have no health condition which might affect their ability to act, they must have good hearing, vision and depth perception
- The hoist operator must be carefully instructed in his duties and must understand the operation of the hoist, including a study of manufacturer's literature
- The operator must thoroughly understand proper methods of hitching loads and should have a good attitude regarding safety
- It is the operator's responsibility to refuse to operate the hoist under unsafe conditions.

MOUNTING THE TROLLEY

Danger

ATS2000 trolleys must only be installed by qualified personnel. Faulty installation can lead to serious accidents.

Caution

The trolley girders for ATS2000 trolleys must be able to safely withstand the expected forces.

The calculation of the static load and the selection of the girder profile are the responsibility of the operator. The carrying capacity of the suspended/built-in hoist must not be greater than the capacity of the trolley. Dynamic tractive forces must be considered.

ATS2000 trolleys are designed for running girder profiles in accordance with DIN 102 or similar profiles.

There must be sufficient room for the trolley to move freely along the whole of the track. For example there should be no screw heads, clamping plates, web plates or other similar items in the way. Please bear in mind that the side plates of the trolley could be taller than the girder, especially if the girder is particularly small. If this is the

case, the girders must be suspended or mounted so that they are self-supporting in order to avoid interfering with the movement of the trolley.

Unhindered movement of the attached energy supply system must be ensured along the trolley's path.

The control hoses on the motor side leading to the control valve should only be connected after having mounted the trolley in order to avoid damage (see section CONNECTING THE CONTROL HOSES).

MOUNTING

Screw the clevis load bar with the end marked with an "L" (left-handed thread) approx. 3 mm into the side plate also marked with "L". Screw the second side plate (rear plate) approx. 3 mm onto the other end of the clevis load bar as well. Following this, the clevis load bar is turned further into the side plates until both ends are visible at the outer sides of the side plates.

MOUNTING TROLLEY WITH CLEVIS LOAD BAR INTO GIRDERS WITH OPEN ENDS

By screwing in the clevis load bar, both side plates are brought to a distance that is approx. 4 - 8 mm wider than the bottom flange width of the girder. See Figure 1

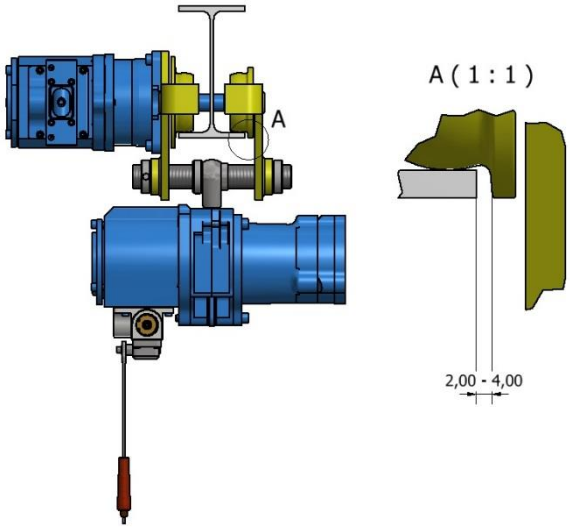

Figure 1 - Girder to Wheel Clearance

The running gear can now be mounted into the track girder by pushing the running gear onto the girder so that the running wheels roll on the bottom flange.

After mounting, the clearance between the outer edge of the bottom flange of the girder and the wheel flange must be between 1 and 1.5 mm on either side.

DANGER

At the largest girder width, the clevis load bar must be at least flush with both side plates on the outside.

MOUNTING TROLLEYS WITH CLEVIS LOAD BAR INTO GIRDERS WITH CLOSED ENDS

By turning the clevis load bar, a pre-adjustment takes place to mount the trolley onto the bottom flange of the girder. The trolley is first pushed onto one end with two wheels and then adjusted by turning the clevis load bar so that the opposite wheels are also placed on the bottom flange. After mounting the trolley, the clearance between the outside edge of the bottom flange of the girder and the wheel flange should be set to between 1 and 1.5 mm on either side.

DANGER

Incorrect suspension/loading of the load bar, i.e. over the flat cross-section, causes danger of fracture and is therefore not permissible.

After the running gear width has been adjusted, the clevis of the load bar must be positioned centre to the girder as shown in Figure 2. The load hook of the lifting equipment can now be attached to the clevis.

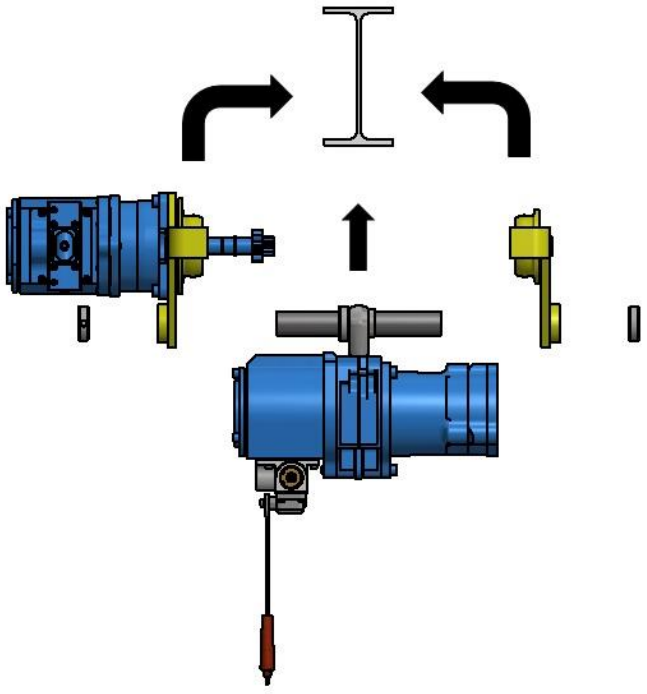

Figure 2 - Capped beam Assembly

DANGER

Do not drop lifting equipment; equipment should always be placed properly onto the floor.

MOUNTING TROLLEYS WITH LOAD BOLT (OVER 2 TON WLL) INTO GIRDERS WITH OPEN ENDS

1. Mount the trolley at one end of the girder. For rack-and-pinion drive, the drive pinion is to be lowered first in order to be released from the rack and pinion.
2. Secure both ends of the girder with end stops to prevent the trolley from falling. They must be designed for the impact load occurring in the event of a collision, with full load and full speed.
3. The end stops have to be equipped with a buffer. We recommend the ATS Series of clamping buffers. For rack-and-pinion drive, engage the drive pinion (see section - ADJUSTING THE RACK-AND-PINION DRIVE Page 10)
4. The hexagonal nuts **1, 2** of the distance spacers **3** and the load bolt **4** at the rear side plate **6** have to be loosened so far that the trolley can be pushed over the bottom flange of the girder. If necessary, the rear side plate including the outer distance washers **7** have to be completely dismantled. For rack-and-pinion drive, the drive pinion is to be lowered first in order to be released from the rack and pinion.
5. In the case of running gears without distance spacers, the retaining rings must be removed from the hexagonal nuts **2** of the load bolts and the hexagonal nuts **2** at the rear side section must be loosened so far that the trolley can be pushed over the bottom flange of the girder. If necessary, the rear side plate must be completely dismantled.
6. Position the trolley (possibly including the hoist) with running wheels of the front side plate on the bottom flange of the girder.
7. Thread on and tighten the rear side plate using washer sets (see section **Screw retainers and torques**, page 43).

Notice

Please pay attention to the position and number of the locking rings and distance washers that fasten the hoist to the middle of the trolley. See Figure 3 below.

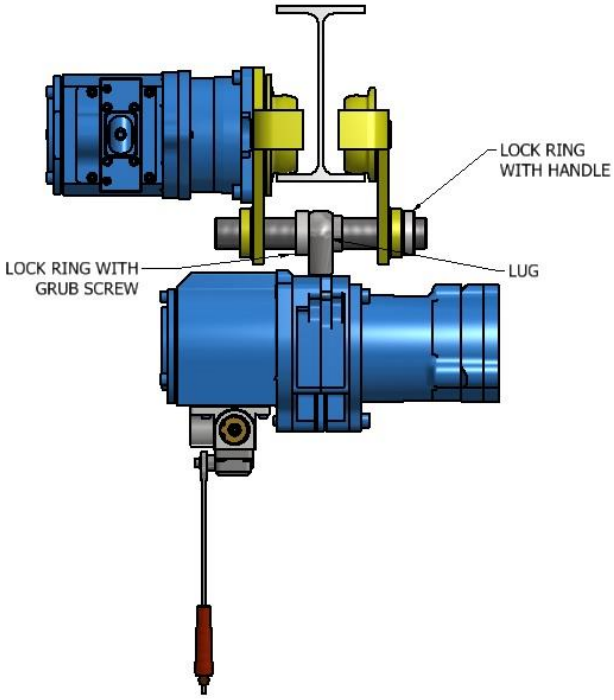

Figure 3 - Lock Ring Order

8. Connect the controls (see section **Connecting the Controls**).

After mounting please check:

1. The clearance between the outer edge of the girder flange and the wheel flange. It should be between 2 and 3 mm on either side.
2. The position of the anti-tipping device on the rear plate. It should have a clearance of approx. 1 mm to the underside of the girder.
3. The fit and position of the end stops.

ADJUSTING THE RACK-AND-PINION DRIVE

The rack-and-pinion drive may be moved vertically if the retaining bolts are loosened. This feature allows for the adjustment of the flank clearance. It also offers the option of releasing the engagement into the rack and pinion. This is shown in Figure 4.

After mounting the trolley with the rack-and-pinion drive disengaged, the flank clearance must be adjusted.

In case of more than one drive on a running gear, one drive must be engaged first as described. To engage additional drives, the pinion must be brought into a suitable position with respect to the rack. Thereafter, the engagement is to be adjusted as described.

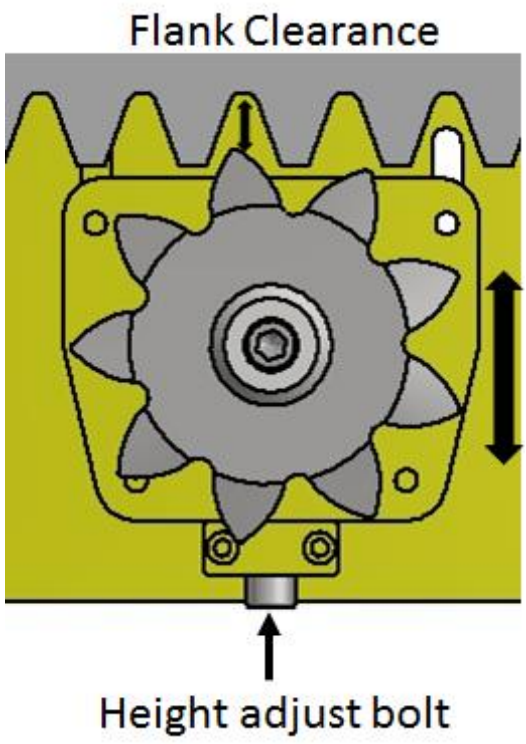

Figure 4 - Rack height adjustment

COMMISIONING THE TROLLEY

CONNECTING THE CONTROL HOSES

In case the control device is delivered separately, for your guidance short hose pieces have been put into the plug-in connections at the factory. Their colour or numbering corresponds to that of the hoses to be connected, enabling you to connect the hoses one after the other.

REMOVING THE HOSE PIECES

- Press down the locking ring **1** with a suitable tool (for example screwdriver), pulling out the hose piece **2** at the same time.

1 - Air connection on the left

2 - Main air connection

3 - Air connection 2nd travel speed

4 - Control port on the right

ATTENTION!
Please ensure that the hose is not bent when inserted.

- Put the loop of the strain relief (wire rope) into the existing eyebolt.
- Put the end of the corresponding hose into the hole of the corresponding plug-in connection.
- Push the hose in as far as the stop.
- Check the connection by pulling on the hose.

If air escapes from the connection during operation, try to push the hose concerned even further in.

CONNECTING TO THE MAIN AIR SUPPLY

Check air connection for contamination and clean if necessary. Blow through compressed air hose in order to remove foreign bodies. Attach the compressed air hose to the connection on the hoist or on the service unity. Tighten the union nut.

LUBRICATION

All ATS Indu™ Series air hoist motors are designed for lubrication free operation. Excessive oil in the inlet may cause damage to the motor and may result in difficulty starting and premature motor failure.

Caution

While a small amount of hydraulic oil or oil designed for vane type air motors is acceptable, under no circumstances should automotive type detergent oil be used. Detergents will de-laminate the motor vanes and cause premature motor failure.

STARTING OPERATION

If the trolley is operating with an ATS2000 Hoist, the operation manual of the mounted hoist/hoist system has to be observed before putting into operation, the section Pre-start checks also applies.

INSPECTION

Careful inspection on a regular basis will reveal potentially dangerous conditions while still in the early stages, allowing corrective actions to be taken before the condition becomes dangerous.

Any deficiency revealed through inspection must be reported to an appointed person. A determination must be made as to whether a deficiency constitutes a safety hazard before resuming operation of the hoist.

The results of the inspection must be recorded in the inspection log.

INSPECTION BEFORE INITIAL OPERATION

Hoists mounted into trolleys have to comply with the regulations for the prevention of accidents valid for cranes. Before beginning to use a crane for the first time and after any major modification before starting to work with it again, it has to be checked by a qualified person. See also ZH1/27 "Principles for the Testing of Cranes".

The test has to include the orderly erection, equipment and the readiness of service, etc. The suitability of operation of the ready-to-operate equipment has to be safeguarded:

- By a dynamic test with 1.1 times the maximum carrying capacity under normal working conditions (lift load just above floor),
- If necessary by a static test with 1.25 times the maximum carrying capacity (with motorized equipment).
  Note: The static test is not applicable for hand-operated cranes
- During these tests, no permanent deformation (distortion), disturbances of performance or other failures may occur.

As according to BGG (ZH1/27), hoists in trolleys do not represent a ready-to-use installation on delivery; the manufacturer only supplies a declaration of incorporation. EC conformity cannot be issued until the ready-to-operate installation has been checked by an authorized person.

If necessary, further tests on the basis of national regulations have to be executed. In case of testing loads higher than those mentioned in this manual, please contact ATS2000.

If the control circuit of the installation allows several movements at the same time, the dynamic test has to be executed with combined movements.

For trolleys with rack-and-pinion drives, sufficient flank clearance (approx. 0.3 mm) must be set between the drive pinion and the rack, along the entire track. If the setting is too close, the drive pinion could be damaged or even break.

FREQUENT INSPECTION

On hoists in continuous service, frequent inspection should be made at the beginning of each shift. In addition, visual inspections should be conducted during regular service for any damage or evidence of malfunction.

OPERATION

Check for visual signs or abnormal noises (grinding etc.) which could indicate a potential problem. Make sure all controls function properly and return to neutral when released. Check chain feed through the chain guides and undercarriage. If chain jams, wedges, jumps are excessively noisy or "clicks", clean and lubricate the chain. If problem persists replace the chain sprockets or chain guide. Do not operate the hoist until all problems have been corrected.

RULES FOR THE SAFE OPERATION OF TROLLEYS

In addition to the rules listed in the operation manual for ATS2000 air hoists and ATS2000 monorail hoists, the following rules have to be observed:

- If several trolleys are working together, the customer has to set up the conditions for safe operation.
- If the local conditions or the work to be performed make it necessary, the customer has to define operating instructions.
- Maintenance and inspection work may only be performed once the people in charge are convinced that the trolley and the hoist/monorail hoist are cut off from the energy supply and that measures have been taken to prevent the unauthorized supply of energy.

The same applies to maintenance work and any changes in case personnel in the working area of the trolley may be exposed to danger. If there is a danger that parts may fall down, the corresponding area has to be barricaded and protected by suitable guards. Other risks from neighbouring installations also have to be safeguarded against. After completion of the work, operation may only recommence following release by the operator. Before release, the operator must be convinced that all work has finally been completed, that the whole trolley including hoist/hoist system is in a safe condition again, and that all personnel involved have cleared the installation.

See also "Rules for the safe operation of hoists" in the operation manual **Air hoists/monorail hoists.**

If components other than ATS2000 components are used, danger may occur. Such an application can only be allowed after having received ATS2000 agreement.

CONTROLS

PILOT PENDANT CONTROL

The hoist is operated via a two button pilot pendent control. The two buttons control the lifting and lowering of the hoist. For hoists mounted on motorized trolleys a four button pilot pendent control is supplied which controls the horizontal movement of the trolley in addition to the lifting and lowering of the hoist. The pilot pendent control allows for precise spotting and variable speed control and has arrows indicating the direction of movement of the lower hook and the trolley. When the buttons are released, the control valve shuts off the air supply to the hoist thereby applying the brake and stopping the hoist.

EMERGENCY STOP

All controls are fitted with an emergency stop button. The emergency stop button, when pressed, locks in the down position and halts the motion of the trolley. All other pushbuttons are then inoperable. The emergency stop can be released once the danger has been eliminated. Operation of the trolley using the pushbuttons can only take place after this has been done. The control is shown in Figure 5.

- In the event of a hazard, press down firmly on the red EMERGENCY STOP button.
- Once the hazard has been removed, pull the E-stop button to re-activate the control.

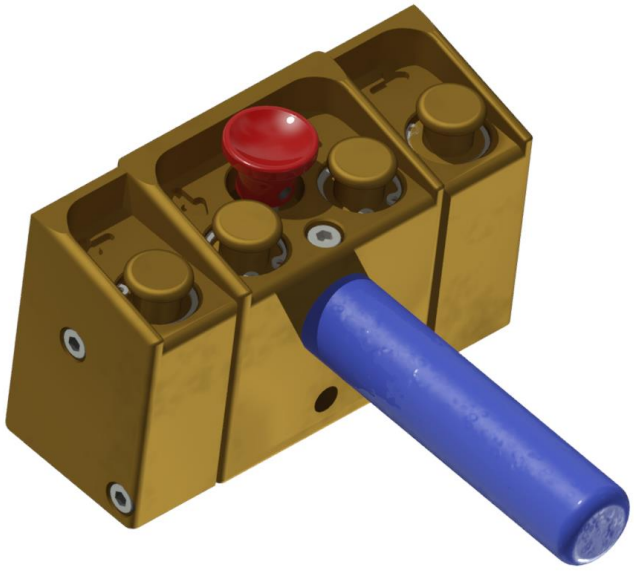

Figure 5 - 4 Button Control with E-stop

TAKING OUT OF OPERATION

SHUTTING DOWN

If the hoist is to be taken out of operation for a period of time longer than a regular service interval, it must be protected against corrosion and dirt as follows:

- Coat the chain and hook with a light oil film.
- Move the load hook out of the lifting area, in order to avoid hazardous situations.
- Do not move against the lifting and lowering limiters/buffers (emergency end stop devices).
- Depressurise the air line.

DISMANTLING

Danger

ATS2000 Air Hoists must only be dismantled by qualified personnel, as described in the SAFETY INFORMATION section.

Warning

Disconnect the air supply hose before performing any maintenance or repairs on this hoist.

- Check fault list for problem solving.
- Do not disassemble the hoist any further than necessary to replace or repair damaged parts, unless major service is due.
- Whenever grasping a component in a vice, always use aluminum covered or copper covered vice jaws to protect the surface of the component and help prevent damage. This is particularly true of threaded members and housings.
- Do not disassemble this hoist unless you have a complete set of new gaskets, O-rings and seals on hand for replacement. These are available in the Overhaul Seal and Gasket Kit and parts list.
- Do not attempt to recondition by washing out sealed bearings. We recommend that all bearing, vanes & O-rings be replaced when the hoist is reassembled.

DISMANTLING THE CONTROL VALVE

- If the hoist has a pendent control, remove the three pendent control hoses.
- Unscrew the four bolts attaching the control valve to the motor housing. Remove the control valve from the hoist. Remove the gasket.

- Examine all components for wear, replacing damaged or worn components. Replace all gaskets and O-rings before re-assembly.
- Remove all sharp edges and burrs from components. Wipe all components with SAE 10W oil before re-assembling in the reverse order to stripping.

DISPOSAL

ATS2000 Hoists contain a range of materials which, on expiry of the service life, must be disposed of or recycled where appropriate, in accordance with statutory regulations.

Please note the following list of materials used:

HOIST

- Ferrous materials
  - Steel
  - Nodular cast iron
- Non-ferrous metals
  - Bronze
- Plastics
  - Polyethylene
  - Polyurethane
  - Polyamide
  - Natural rubber
  - Epoxy resin
  - Polyacetal
  - Thermoset moulding compound
  - (Asbestos-free brake lining)

FILTER SILENCER/SERVICE UNIT:

- Zinc die cast
- Brass
- Nitrile rubber
- Aluminium
- Polypropylene
- Polyurethane
- Glass-fibre reinforced plastic
- Steel
- Polyacetal
- Polythylene

MAINTENANCE

MAINTENANCE AND INPECTION INTERVALS

ATS2000 trolleys are extremely robust and require little maintenance. Compliance with maintenance and inspection intervals is of great importance, in order that the trolleys operate safely and reliably over a period of many years. If the trolley is being operated in a harsh environment that leads to accelerated wear, then the intervals should be reduced.

Caution

Maintenance work on ATS2000 trolleys must only be performed by trained and qualified personnel.

In the case of maintenance work exceeding normal service and maintenance, please contact ATS2000.

CLEANING AND CARE

If your ATS2000 trolley has to work in dirty surroundings, remove coarse dirt from the trolley.

SPARE PARTS

If, during repair work, the replacement of components is necessary, only original ATS2000 spare parts may be installed.

INSPECTION AND REPAIRS

ATS2000 recommends two types of inspection:

1. The frequent inspection performed by the operator as pre-work inspection.
2. The periodic inspections performed by personnel trained in the operation and repair of this hoist.

Careful inspection on a regular basis will reveal potentially dangerous conditions while still in the early stages, allowing corrective actions to be taken before the condition becomes dangerous.

Any deficiency revealed through inspection must be reported to an appointed person. A determination must be made as to whether a deficiency constitutes a safety hazard before resuming operation of the hoist.

RECORDS AND REPORTS

An inspection record should be maintained for each hoist, listing all points requiring periodic inspection. A written report should be made monthly on the condition of the critical parts of each hoist. These reports should be dated, signed by each person who performed the inspection, and kept on file where they are readily available to authorized personnel.

PERIODIC INSPECTION

Frequency of periodic inspection depends on the severity of usage:

NORMAL	HEAVY	SERVERE
Yearly	Biannually	Quarterly

Notice

Please note the requirements of the Occupational Health and Safety Act of South Africa (Act 85 of 1993), Driven Machinery (Regulation 18) Lifting Machines and Lifting Tackle regarding the examination and testing of lifting machines and lifting tackle.

Disassembly may be required for HEAVY or SEVERE usage. Keep accumulative written records of periodic inspections to provide a basis for continuing evaluation. Inspect all the items in "Frequent Inspection".

Motor

If performance is poor, disassemble the motor and check for wear or damage to bearings, vanes, cylinder end plates and other parts. The parts should be cleaned, lubricated and reassembled. Replace worn or damaged parts.

Supporting Structure

Check for distortion, wear and continued ability to support the load.

Trolley

Check that the trolley wheels run properly on the beam and that the distance between wheel flanges exceeds the beam flange size by 4.5 to 6 mm. Check that wheels and rail are not excessively worn and inspect the side plates for opening up due to bending. Do not operate the hoist until any problems have been identified and corrected.

Nameplate

Check for presence and legibility. Replace if necessary.

TROLLEYS NOT IN REGULAR USE

- A hoist which has been idle for period of one month or more, but less than one year, should be given an inspection conforming with the requirements for "Frequent Inspection" prior to being placed into service.
- A hoist which has been idle for a period of more than one year should be given an inspection conforming with the requirements of "Periodic Inspection" prior to being placed into service.
- Standby hoist should be inspected at least biannually in accordance with the requirement of "Frequent Inspection". In abnormal operating conditions hoists should be inspected at shorter intervals.

FILTRATION

Should the airline filtration not be integrated into the motor housing a proper high capacity filter is required with a 100 micron screening and should were possible include a water separator. Do not use tap water screens as they pass particles of between 0, 25 - 0, 50 mm which will cause excessive wear in the motor.

TESTING THE BRAKE (MOTORISED TROLLEYS)

Test the brake function daily.

When the pushbuttons of the controls are released, the trolley must not keep running for an unusually long time.

Notice

If the trolley keeps running for an unusually long time after braking, the brake must be stripped and inspected by a qualified person.

TROUBLESHOOTING

This section provides the information necessary for troubleshooting the ATS INDU series of hoists. The troubleshooting guide provides a general outline of problems which could be experienced with normal use of the hoist. It lists the symptom, the possible cause, and the possible remedy for the trouble being experienced.

SYMPTOM	CAUSE	REMEDY
Trolley cannot be moved	EMERGENCY STOP button pressed	If there is no danger, release the EMERGENCY STOP button
	Motor run dry, rotor is stuck	Repair the motor, check the service unit (fill with oil, remove water) or renew grease lubrication
Trolley can only be moved slowly or not at all	Defective control device	Have control device repaired
	Control lines leaking or bent	Have lines repaired

	Motor vanes worn	Replace motor vanes
	Control valve on motor faulty	Have control valve repaired
	Two-way valve in the motor defective	Have shuttle valve repaired
	Air pressure too low	Increase air pressure or hose section
	Plug-in connection of control lines not properly plugged in	Check plug-in connection (try to press hoses in further)
	Track of trolley too narrow	Adjust the clearance between the wheel flange and the outside edge of the bottom flange of the trolley girder
Trolley speed reduces when operated for a long period or the motor stops	Brake piston setting too tight	Correct adjustment of brake piston. At high ambient temperatures, perform adjustment with the motor warmed up accordingly.
Trolley can only be moved slowly or not at all	Brake does not bleed fully	Increase air pressure to 6 bar. Check brake seal for leaks and replace seal if required.
	Brake lining and/or brake piston worn	Replace brake lining and or brake piston.
Trolley is repeatedly blocked at the same place	Tracks are uneven or rail joint displaced	Rectify track faults
	Curve radius too small	Increase curve radius